

## Ports of Auckland VIRTUAL REALITY PILOT TRAINING

Virtual reality offers a great platform for training applications, particularly in scenarios where physical training is not suitable or too costly.

At Ports of Auckland, new pilots must receive training on the correct techniques for safely boarding a moving ship. Previously, this was simulated by climbing a ladder on land up the side of two stacked shipping containers. This method required a variety of extensive safety measures, as well as being costly and time consuming.



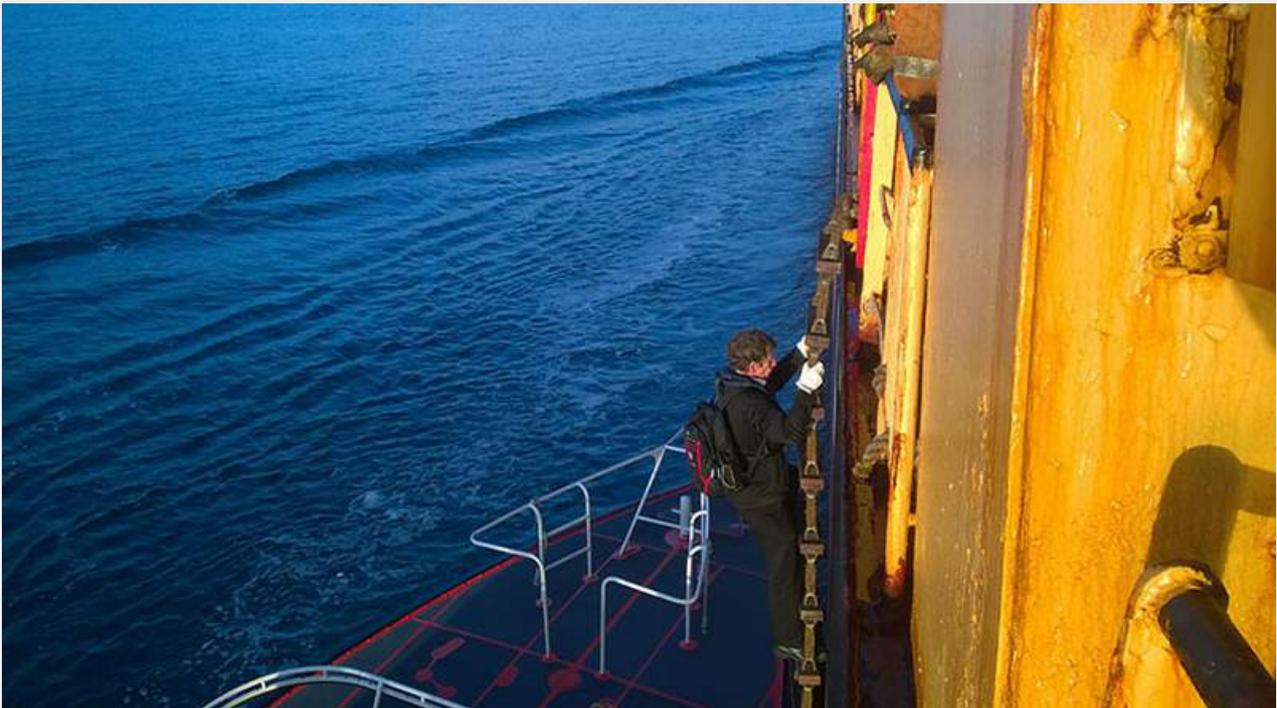
To combat these constraints, we built a virtual training experience that

replicates the ship boarding process while also incorporating learning and assessment activities.

### Creating a more accurate training process

VR allows for many new interactions that would not otherwise be possible. For Ports of Auckland, the on-land ladder setup provided great climbing practice but left out critical steps in the piloting process. In VR, we could facilitate the pilot transfer process from start to finish, replicating tasks such as jumping from the pilot boat to the cargo ship's ladder at the correct time.

## ***IN VR WE COULD FACILITATE THE PILOT TRANSFER PROCESS FROM START TO FINISH***



In a previous engagement with Ports of Auckland (developing the Master Pilot Exchange App) we spent a day in the life of a pilot where we observed and participated in boarding large cargo ships. This experience allowed us to better understand the boarding process, which greatly helped with VR storyboarding.

We began by sketching key scenes to create a user flow, increasing in fidelity as we became surer of the desired experience.

The primary outcomes of creating storyboards were:

- Detailing which actions would allow the user to proceed, and which would result in failure
- Presenting Ports of Auckland with a defined feature set for the training experience
- Highlighting the key 3D models that would need to be included, so that early modelling could begin

### **Virtually replicating the physical environment**

In some traditional training scenarios, the surroundings of the real-world task cannot be accurately reproduced by the training location. This puts

***WE CREATED 3D MODELS  
THAT ACCURATELY  
REPRESENT THE BOATS  
AND EQUIPMENT USED IN  
PILOT TRANSFERS***

trainees at a disadvantage as they are not given the chance to become familiar with nuances of the environment. By simply climbing up the side of shipping containers, Ports of Auckland's pilot trainees

lacked any spatial knowledge of the transfer process. Using VR, we could replicate the layout of the pilot boat, the scale of a large container ship, and the moving water below.



We created 3D models that accurately represent the actual boats and equipment used in pilot transfers at Ports of Auckland. Interacting with detailed renders of real-world objects gives trainees valuable insights.

***TRAINEES GET A  
SENSE OF HOW LARGE  
CARGO SHIPS WILL  
APPEAR***



They can see exactly how the ladder will be set up, get a sense of how large cargo ships will appear, and gain the confidence to navigate around the pilot boat during their first real transfer.

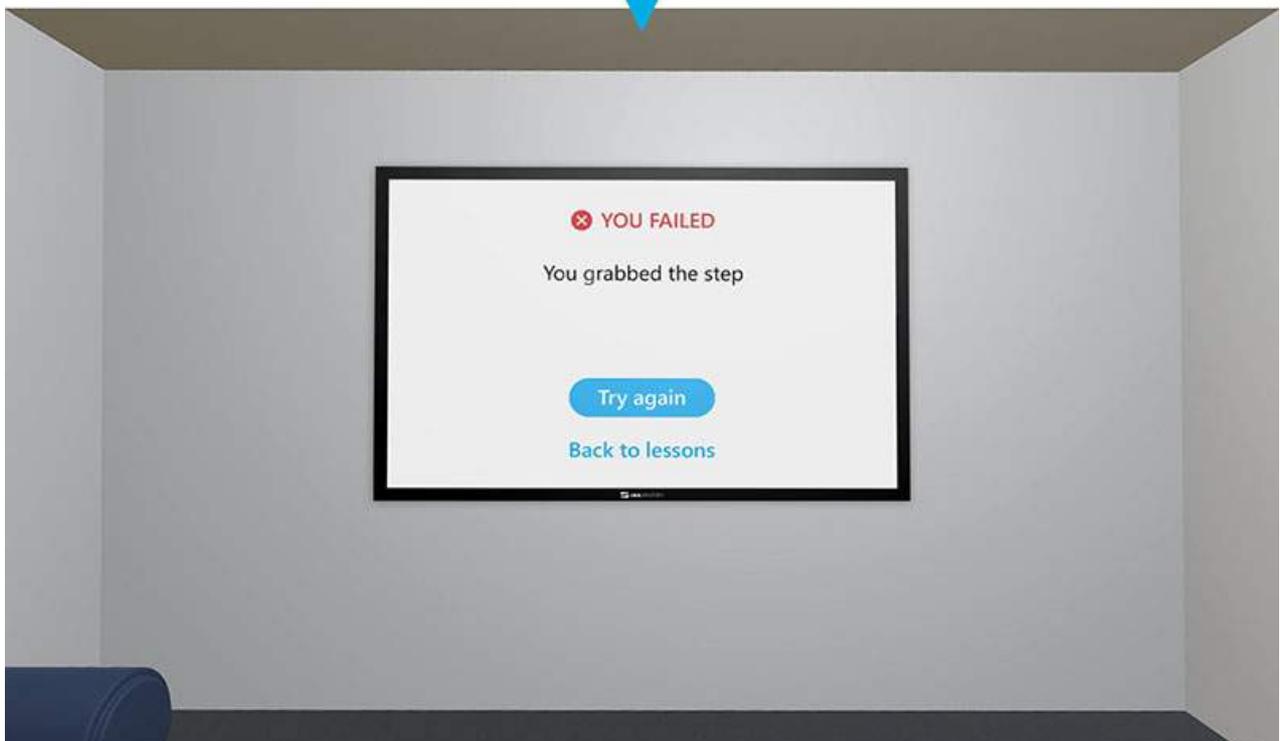


### **Integrated learning material and assessments**

To ensure a trainee's safety in a real-world scenario it is important that tasks are performed correctly during training. In the VR Pilot Training experience, we built in checks that alert trainees of their mistakes and prompt them to try the assessment again. These fail scenarios were based around Ports of Auckland's safety protocol for pilot transfers.

**BUILT IN CHECKS ALERT  
TRAINEES OF THEIR  
MISTAKES AND PROMPT  
THEM TO TRY AGAIN**

Individuals are unable to progress if they don't select the correct PPE, don't grab the safety lanyard, lean too far back on the ladder, or for a number of other safety reasons.



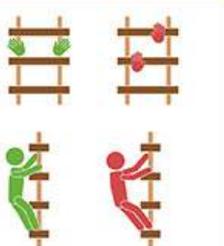
Ports of Auckland were also looking to replace their existing learning management system, so that pilots could complete all their training in one

place. Before each of the assessments, we inserted lesson slides, videos, and quiz questions, to reinforce training objectives.

✕ Climbing Technique

When climbing, only grab the vertical ropes, never the horizontal steps.

Look upwards at the ladder as you climb. Keep your body weight close to the ladder, do not lean back.



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✕ PPE for Piloting

Which PPE is NOT required for a pilot transfer?

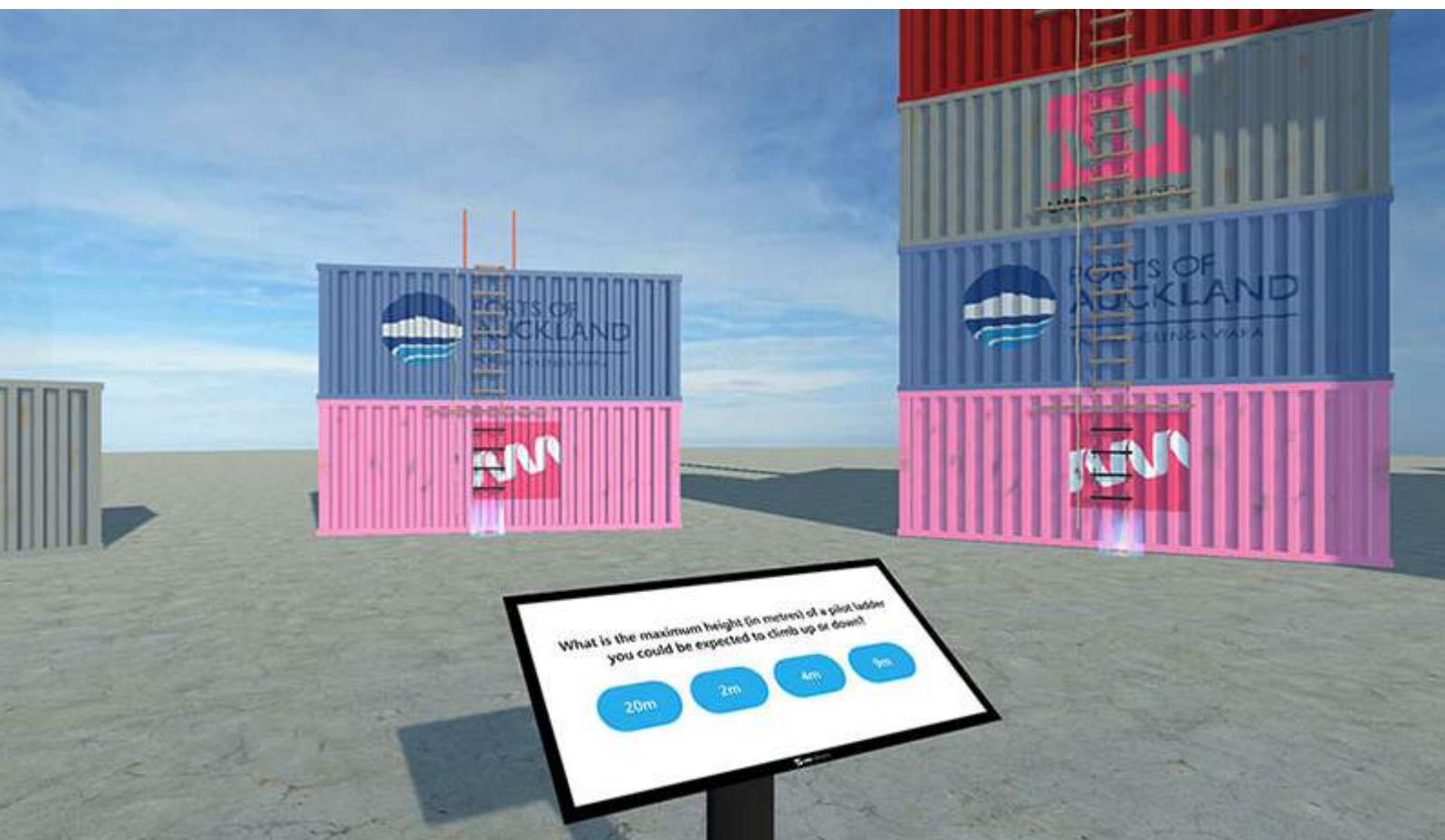
Helmet      Gloves

Ear muffs      Hi-vis vest

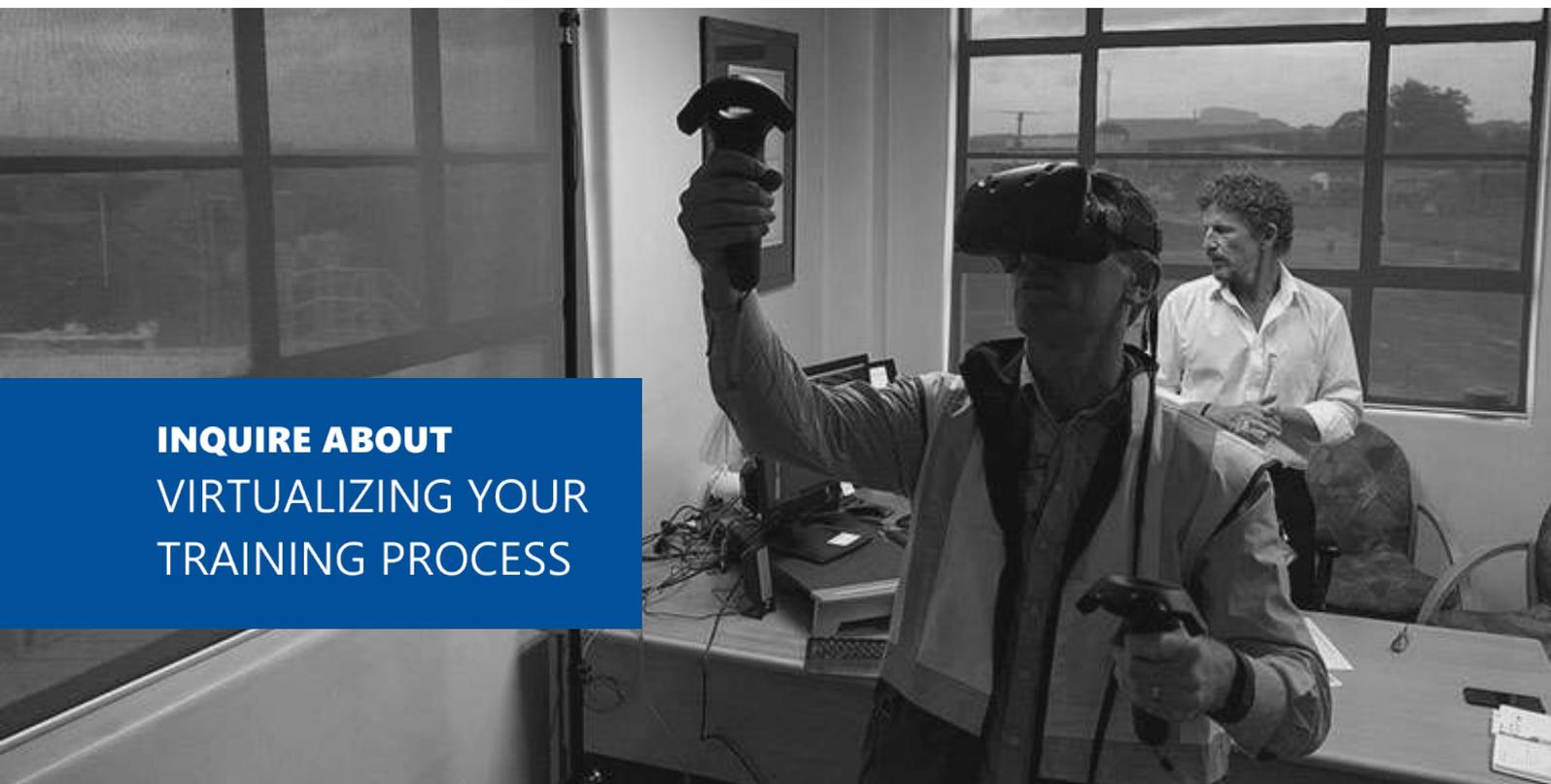
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## **PILOTS CAN COMPLETE ALL THEIR TRAINING IN ONE PLACE**

User testing revealed that individuals who completed the lessons first were much more successful during the interactive assessments.



The resulting VR application provides a convincing audiovisual experience of completing a pilot transfer alongside a moving container ship, as well as integrating critical training requirements through lessons and assessments. With the introduction of virtual reality, Ports of Auckland benefits from a more cost effective and accessible method of pilot training.



**INQUIRE ABOUT  
VIRTUALIZING YOUR  
TRAINING PROCESS**